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SEQUENCE LISTING

<110> HATTORI, NORIAKI
MURAKAMI, SEIJI

<120> LUCIFERASE AND A METHOD FOR DETECTING INTRACELLULAR ATP USING THE
SAME

<130> 193582US-3524-7126-0 PCT

<140> 09/581241

<141> 2000-06-26

<150> JP97/361022

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<160> 8

<170> PatentIn version 3.2

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Met Asp Arg Tyr Ala Lys Leu Gly Ala Ile Ala Phe Thr Asn Ala Leu	
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Thr Gly Val Asp Tyr Thr Tyr Ala Glu Tyr Leu Glu Lys Ser Cys Cys	
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gcg tta tgc agt gaa aac tgt gaa gaa ttc ttt att cct gta tta gcc	288
Ala Leu Cys Ser Glu Asn Cys Glu Glu Phe Phe Ile Pro Val Leu Ala	
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Gly Leu Phe Ile Gly Val Gly Val Ala Pro Thr Asn Glu Ile Tyr Thr	
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Asn Ile Phe Asp Ala Gly Val Ala Gly Val Pro Asp Pro Ile Ala Gly	
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 20 25 30
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 Met Asp Arg Tyr Ala Lys Leu Gly Ala Ile Ala Phe Thr Asn Ala Leu
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 acc ggt gtc gat tat acg tac gcc gaa tac tta gaa aaa tca tgc tgt 192

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90

95

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Gly Phe Lys Gly Ser Ser Phe Lys Thr Val Glu Val Asn Arg Lys Glu
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Gln Val Ala Leu Ile Met Asn Ser Ser Gly Ser Thr Gly Leu Pro Lys
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Gly Val Gln Leu Thr His Glu Asn Ile Val Thr Arg Phe Ser His Ala
 210 215 220

Arg Asp Pro Ile Tyr Gly Asn Gln Val Ser Pro Gly Thr Ala Ile Leu
 225 230 235 240

Thr Val Val Pro Phe His His Gly Phe Gly Met Phe Thr Thr Leu Gly
 245 250 255

Tyr Leu Thr Cys Gly Phe Arg Ile Val Met Leu Thr Lys Phe Asp Glu
 260 265 270

Glu Thr Phe Leu Lys Thr Leu Gln Asp Tyr Lys Cys Ser Ser Val Ile
 275 280 285

Leu Val Pro Thr Leu Phe Ala Ile Leu Asn Arg Ser Glu Leu Leu Asp

290

295

300

Lys Tyr Asp Leu Ser Asn Leu Val Glu Ile Ala Ser Gly Gly Ala Pro
 305 310 315 320

Leu Ser Lys Glu Ile Gly Glu Ala Val Ala Arg Arg Phe Asn Leu Pro
 325 330 335

Gly Val Arg Gln Gly Tyr Gly Leu Thr Glu Thr Thr Ser Ala Ile Ile
 340 345 350

Ile Thr Pro Glu Gly Asp Asp Lys Pro Gly Ala Ser Gly Lys Val Val
 355 360 365

Pro Leu Phe Lys Ala Lys Val Ile Asp Leu Asp Thr Lys Lys Thr Leu
 370 375 380

Gly Pro Asn Arg Arg Gly Glu Val Cys Val Lys Gly Pro Met Leu Met
 385 390 395 400

Lys Gly Tyr Val Asp Asn Pro Glu Ala Thr Arg Glu Ile Ile Asp Glu
 405 410 415

Glu Gly Trp Leu His Thr Gly Asp Ile Gly Tyr Tyr Asp Glu Glu Lys
 420 425 430

His Phe Phe Ile Val Asp Arg Leu Lys Ser Leu Ile Lys Tyr Lys Gly
 435 440 445

Tyr Gln Val Pro Pro Ala Glu Leu Glu Ser Val Leu Leu Gln His Pro
 450 455 460

Asn Ile Phe Asp Ala Gly Val Ala Gly Val Pro Asp Pro Ile Ala Gly
 465 470 475 480

Glu Leu Pro Gly Ala Val Val Val Leu Lys Lys Gly Lys Ser Met Thr
 485 490 495

Glu Lys Glu Val Met Asp Tyr Val Ala Ser Gln Val Ser Asn Ala Lys

500

505

510

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 Phe Tyr Pro Ile Glu Glu Gly Ser Ala Gly Ala Gln Leu Arg Lys Tyr
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 atg gat cga tat gca aaa ctt gga gca att gct ttt act aac gca ctt 144
 Met Asp Arg Tyr Ala Lys Leu Gly Ala Ile Ala Phe Thr Asn Ala Leu
 35 40 45
 acc ggt gtc gat tat acg tac gcc gaa tac tta gaa aaa tca tgc tgt 192
 Thr Gly Val Asp Tyr Thr Tyr Ala Glu Tyr Leu Glu Lys Ser Cys Cys
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 cta gga gag gct tta aag aat tat ggt ttg gtt gtt gat gga aga att 240
 Leu Gly Glu Ala Leu Lys Asn Tyr Gly Leu Val Val Asp Gly Arg Ile
 65 70 75 80
 gcg tta tgc agt gaa aac tgt gaa gaa ttc ttt att cct gta tta gcc 288
 Ala Leu Cys Ser Glu Asn Cys Glu Glu Phe Phe Ile Pro Val Leu Ala
 85 90 95
 ggt tta ttt ata ggt gtc ggt gtg gct cca act aat gag att tac act 336
 Gly Leu Phe Ile Gly Val Gly Val Ala Pro Thr Asn Glu Ile Tyr Thr

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cta	cgt	gaa	ttg	gtt	cac	agt	tta	ggc	atc	tct	aag	cca	aca	att	gta	384		
Leu	Arg	Glu	Leu	Val	His	Ser	Leu	Gly	Ile	Ser	Lys	Pro	Thr	Ile	Val			
		115					120					125						
ttt	agt	tct	aaa	aaa	gga	tta	gat	aaa	gtt	ata	act	gta	caa	aaa	acg	432		
Phe	Ser	Ser	Lys	Lys	Gly	Leu	Asp	Lys	Val	Ile	Thr	Val	Gln	Lys	Thr			
	130					135					140							
gta	act	gct	att	aaa	acc	att	gtt	ata	ttg	gac	agc	aaa	gtg	gat	tat	480		
Val	Thr	Ala	Ile	Lys	Thr	Ile	Val	Ile	Leu	Asp	Ser	Lys	Val	Asp	Tyr			
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aga	ggg	tat	caa	tcc	atg	gac	aac	ttt	att	aaa	aaa	aac	act	cca	caa	528		
Arg	Gly	Tyr	Gln	Ser	Met	Asp	Asn	Phe	Ile	Lys	Lys	Asn	Thr	Pro	Gln			
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ggg	ttc	aaa	gga	tca	agt	ttt	aaa	act	gta	gaa	gtt	aac	cgc	aaa	gaa	576		
Gly	Phe	Lys	Gly	Ser	Ser	Phe	Lys	Thr	Val	Glu	Val	Asn	Arg	Lys	Glu			
			180					185					190					
caa	gtt	gct	ctt	ata	atg	aac	tct	tcg	ggg	tca	acc	ggg	ttg	cca	aaa	624		
Gln	Val	Ala	Leu	Ile	Met	Asn	Ser	Ser	Gly	Ser	Thr	Gly	Leu	Pro	Lys			
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ggg	gtg	caa	ctt	act	cat	gaa	aat	gca	gtc	act	aga	ttt	tct	cac	gct	672		
Gly	Val	Gln	Leu	Thr	His	Glu	Asn	Ala	Val	Thr	Arg	Phe	Ser	His	Ala			
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Arg	Asp	Pro	Ile	Tyr	Gly	Asn	Gln	Val	Ser	Pro	Gly	Thr	Ala	Ile	Leu			
225					230					235					240			
act	gta	gta	cca	ttc	cat	cat	ggg	ttt	ggg	atg	ttt	act	act	tta	ggc	768		
Thr	Val	Val	Pro	Phe	His	His	Gly	Phe	Gly	Met	Phe	Thr	Thr	Leu	Gly			
				245					250					255				
tat	cta	act	tgt	ggg	ttt	cgt	att	gtc	atg	tta	acg	aaa	ttt	gac	gaa	816		
Tyr	Leu	Thr	Cys	Gly	Phe	Arg	Ile	Val	Met	Leu	Thr	Lys	Phe	Asp	Glu			
			260					265					270					
gag	act	ttt	tta	aaa	aca	ctg	caa	gat	tac	aaa	tgt	tca	agc	gtt	att	864		
Glu	Thr	Phe	Leu	Lys	Thr	Leu	Gln	Asp	Tyr	Lys	Cys	Ser	Ser	Val	Ile			
		275					280					285						
ctt	gta	ccg	act	ttg	ttt	gca	att	ctt	aat	aga	agt	gaa	tta	ctc	gat	912		
Leu	Val	Pro	Thr	Leu	Phe	Ala	Ile	Leu	Asn	Arg	Ser	Glu	Leu	Leu	Asp			
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aaa	tat	gat	tta	tca	aat	tta	gtt	gaa	att	gca	tct	ggc	gga	gca	cct	960		
Lys	Tyr	Asp	Leu	Ser	Asn	Leu	Val	Glu	Ile	Ala	Ser	Gly	Gly	Ala	Pro			

305		310		315		320	
tta tct aaa gaa att ggt gaa gct gtt gct aga cgt ttt aat tta ccg							1008
Leu Ser Lys Glu Ile Gly Glu Ala Val Ala Arg Arg Phe Asn Leu Pro							
		325		330		335	
ggg ggt cgt caa ggc tat ggt tta aca gaa aca acc tct gca att att							1056
Gly Val Arg Gln Gly Tyr Gly Leu Thr Glu Thr Thr Ser Ala Ile Ile							
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atc aca ccg gaa ggc gat gat aaa cca ggt gct tct ggc aaa gtt gtg							1104
Ile Thr Pro Glu Gly Asp Asp Lys Pro Gly Ala Ser Gly Lys Val Val							
		355		360		365	
cca tta ttt aaa gca aaa gtt atc gat ctt gat act aaa aaa act ttg							1152
Pro Leu Phe Lys Ala Lys Val Ile Asp Leu Asp Thr Lys Lys Thr Leu							
		370		375		380	
ggc ccg aac aga cgt gga gaa gtt tgt gta aag ggt cct atg ctt atg							1200
Gly Pro Asn Arg Arg Gly Glu Val Cys Val Lys Gly Pro Met Leu Met							
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aaa ggt tat gta gat aat cca gaa gca aca aga gaa atc ata gat gaa							1248
Lys Gly Tyr Val Asp Asn Pro Glu Ala Thr Arg Glu Ile Ile Asp Glu							
		405		410		415	
gaa ggt tgg ttg cac aca gga gat att ggg tat tac gat gaa gaa aaa							1296
Glu Gly Trp Leu His Thr Gly Asp Ile Gly Tyr Tyr Asp Glu Glu Lys							
		420		425		430	
cat ttc ttt atc gtg gat cgt ttg aag tct tta atc aaa tac aaa gga							1344
His Phe Phe Ile Val Asp Arg Leu Lys Ser Leu Ile Lys Tyr Lys Gly							
		435		440		445	
tat caa gta cca cct gct gaa tta gaa tct gtt ctt ttg caa cat cca							1392
Tyr Gln Val Pro Pro Ala Glu Leu Glu Ser Val Leu Leu Gln His Pro							
		450		455		460	
aat att ttt gat gcc ggc gtt gct ggc gtt cca gat cct ata gct ggt							1440
Asn Ile Phe Asp Ala Gly Val Ala Gly Val Pro Asp Pro Ile Ala Gly							
		465		470		475	480
gag ctt ccg gga gct gtt gtt gta ctt gaa aaa gga aaa tct atg act							1488
Glu Leu Pro Gly Ala Val Val Val Leu Glu Lys Gly Lys Ser Met Thr							
		485		490		495	
gaa aaa gaa gta atg gat tac gtt gct agt caa gtt tca aat gca aaa							1536
Glu Lys Glu Val Met Asp Tyr Val Ala Ser Gln Val Ser Asn Ala Lys							
		500		505		510	
cgt ttg cgt ggt ggt gtc cgt ttt gtg gac gaa gta cct aaa ggt ctc							1584
Arg Leu Arg Gly Gly Val Arg Phe Val Asp Glu Val Pro Lys Gly Leu							

515

520

525

act ggt aaa att gac ggt aaa gca att aga gaa ata ctg aag aaa cca 1632
 Thr Gly Lys Ile Asp Gly Lys Ala Ile Arg Glu Ile Leu Lys Lys Pro
 530 535 540

gtt gct aag atg 1644
 Val Ala Lys Met
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Phe Tyr Pro Ile Glu Glu Gly Ser Ala Gly Ala Gln Leu Arg Lys Tyr
 20 25 30

Met Asp Arg Tyr Ala Lys Leu Gly Ala Ile Ala Phe Thr Asn Ala Leu
 35 40 45

Thr Gly Val Asp Tyr Thr Tyr Ala Glu Tyr Leu Glu Lys Ser Cys Cys
 50 55 60

Leu Gly Glu Ala Leu Lys Asn Tyr Gly Leu Val Val Asp Gly Arg Ile
 65 70 75 80

Ala Leu Cys Ser Glu Asn Cys Glu Glu Phe Phe Ile Pro Val Leu Ala
 85 90 95

Gly Leu Phe Ile Gly Val Gly Val Ala Pro Thr Asn Glu Ile Tyr Thr
 100 105 110

Leu Arg Glu Leu Val His Ser Leu Gly Ile Ser Lys Pro Thr Ile Val
 115 120 125

Phe Ser Ser Lys Lys Gly Leu Asp Lys Val Ile Thr Val Gln Lys Thr
 130 135 140

Val Thr Ala Ile Lys Thr Ile Val Ile Leu Asp Ser Lys Val Asp Tyr
145 150 155 160

Arg Gly Tyr Gln Ser Met Asp Asn Phe Ile Lys Lys Asn Thr Pro Gln
165 170 175

Gly Phe Lys Gly Ser Ser Phe Lys Thr Val Glu Val Asn Arg Lys Glu
180 185 190

Gln Val Ala Leu Ile Met Asn Ser Ser Gly Ser Thr Gly Leu Pro Lys
195 200 205

Gly Val Gln Leu Thr His Glu Asn Ala Val Thr Arg Phe Ser His Ala
210 215 220

Arg Asp Pro Ile Tyr Gly Asn Gln Val Ser Pro Gly Thr Ala Ile Leu
225 230 235 240

Thr Val Val Pro Phe His His Gly Phe Gly Met Phe Thr Thr Leu Gly
245 250 255

Tyr Leu Thr Cys Gly Phe Arg Ile Val Met Leu Thr Lys Phe Asp Glu
260 265 270

Glu Thr Phe Leu Lys Thr Leu Gln Asp Tyr Lys Cys Ser Ser Val Ile
275 280 285

Leu Val Pro Thr Leu Phe Ala Ile Leu Asn Arg Ser Glu Leu Leu Asp
290 295 300

Lys Tyr Asp Leu Ser Asn Leu Val Glu Ile Ala Ser Gly Gly Ala Pro
305 310 315 320

Leu Ser Lys Glu Ile Gly Glu Ala Val Ala Arg Arg Phe Asn Leu Pro
325 330 335

Gly Val Arg Gln Gly Tyr Gly Leu Thr Glu Thr Thr Ser Ala Ile Ile
340 345 350

Ile	Thr	Pro	Glu	Gly	Asp	Asp	Lys	Pro	Gly	Ala	Ser	Gly	Lys	Val	Val	355	360	365
Pro	Leu	Phe	Lys	Ala	Lys	Val	Ile	Asp	Leu	Asp	Thr	Lys	Lys	Thr	Leu	370	375	380
Gly	Pro	Asn	Arg	Arg	Gly	Glu	Val	Cys	Val	Lys	Gly	Pro	Met	Leu	Met	385	390	395
Lys	Gly	Tyr	Val	Asp	Asn	Pro	Glu	Ala	Thr	Arg	Glu	Ile	Ile	Asp	Glu	405	410	415
Glu	Gly	Trp	Leu	His	Thr	Gly	Asp	Ile	Gly	Tyr	Tyr	Asp	Glu	Glu	Lys	420	425	430
His	Phe	Phe	Ile	Val	Asp	Arg	Leu	Lys	Ser	Leu	Ile	Lys	Tyr	Lys	Gly	435	440	445
Tyr	Gln	Val	Pro	Pro	Ala	Glu	Leu	Glu	Ser	Val	Leu	Leu	Gln	His	Pro	450	455	460
Asn	Ile	Phe	Asp	Ala	Gly	Val	Ala	Gly	Val	Pro	Asp	Pro	Ile	Ala	Gly	465	470	475
Glu	Leu	Pro	Gly	Ala	Val	Val	Val	Leu	Glu	Lys	Gly	Lys	Ser	Met	Thr	485	490	495
Glu	Lys	Glu	Val	Met	Asp	Tyr	Val	Ala	Ser	Gln	Val	Ser	Asn	Ala	Lys	500	505	510
Arg	Leu	Arg	Gly	Gly	Val	Arg	Phe	Val	Asp	Glu	Val	Pro	Lys	Gly	Leu	515	520	525
Thr	Gly	Lys	Ile	Asp	Gly	Lys	Ala	Ile	Arg	Glu	Ile	Leu	Lys	Lys	Pro	530	535	540
Val	Ala	Lys	Met													545		